

## **Urban transit network design problems: a review of population-based metaheuristics**

### **ABSTRACT**

The urban transit network design problem (UTNDP) involves the development of a transit route set and associated schedules for an urban public transit system. The design of efficient public transit systems is widely considered as a viable option for the economic, social, and physical structure of an urban setting. This paper reviews four well-known population-based metaheuristics that have been employed and deemed potentially viable for tackling the UTNDP. The aim is to give a thorough review of the algorithms and identify the gaps for future research directions.

**Keyword:** Metaheuristics; Public transit systems; Route network; Urban transit network design problem; Urban transit routing problem; Urban transit scheduling problem